AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior listings of claims in this application.

1. – 12. (Canceled)

13. (Currently Amended) A method to determine an optimum common clock speed ~~proper clock cycle time~~ for a server including multiple logic modules ~~with different heat loads while maintaining the clock cycle time as fast as viable~~ each module being cooled by a cooling system, the method comprising:

determining a thermal state of each logic module of the multiple logic modules, each thermal state defined by a discrete temperature range ~~associated with a clock speed predetermined to be a proper clock cycle time for the temperature range~~; and

determining the optimum common clock speed based on module thermal states, self-test clock speeds, power state and ~~whether a primary~~ cooling system repair status ~~means has been repaired~~.

14. (Canceled).

15. (Currently Amended) ~~The method of claim 14 further comprising~~ A method to determine a proper clock cycle time for multiple logic modules with different heat loads, the method comprising:

determining a thermal state of each logic module of the multiple logic modules, each thermal state defined by a discrete temperature range associated with a clock speed predetermined to be a proper clock cycle time for the temperature range;

determining whether a primary cooling means has been repaired; and

controlling a fan speed of the backup cooling fan to prevent oscillation between thermal states.

16. (Currently Amended) ~~The method of claim 13 further comprising:~~ A method to determine a proper clock cycle time for multiple logic modules with different heat loads, the method comprising:

determining a thermal state of each logic module of the multiple logic modules, each thermal state defined by a discrete temperature range associated with a clock speed predetermined to be a proper clock cycle time for the temperature range;

determining whether a primary cooling means has been repaired, and

increasing a voltage applied to a logic module to optimally use at least one of available cooling and power when operating in a backup cooling mode for maximum clock speed at a given temperature.

17. (Currently Amended) ~~The method of claim 13 further comprising:~~ A method to determine a proper clock cycle time for multiple logic modules with different heat loads, the method comprising:

determining a thermal state of each logic module of the multiple logic modules, each thermal state defined by a discrete temperature range associated with a clock speed predetermined to be a proper clock cycle time for the temperature range;

determining whether a primary cooling means has been repaired;

decreasing a voltage applied to a logic module when operating in a backup cooling mode and at least one of cooling or power is unavailable to reduce leakage currents that warmer degraded temperatures generate.

18. (Currently Amended) ~~The method of claim 13,~~ A method to determine a proper clock cycle time for multiple logic modules with different heat loads, the method comprising:

determining a thermal state of each logic module of the multiple logic modules, each thermal state defined by a discrete temperature range associated with a clock speed predetermined to be a proper clock cycle time for the temperature range;

determining whether a primary cooling means has been repaired;

wherein said determining a thermal state of each logic module of the multiple logic modules is done through redundant thermal sensors directly monitoring a region representative of circuit temperatures of a corresponding logic module to provide at least one of thermal protection and redundancy to guide cooling control.

19. The method of claim 18, wherein the region corresponds with one of a hat, substrate, and individual chips of a multi chip module (MCM).

20. The method of claim 18, wherein the thermal sensors are compared for at least one of miscompare properties and insanity limits to check accuracy of each measured temperature.

21. The method of claim 20, wherein the thermal sensors include a first thermal sensor sensed by the refrigerant unit and second and third thermal sensors read by a power supply supplying power to the multiple logic modules to insure at least one of full redundancy and accuracy.

22. The method of claim 21, wherein the second and third thermal sensors are compared to each other and to the first thermal sensor, the second and third thermal sensors providing thermal protection of the multiple logic modules by dropping power if at least one of second and third thermal sensors indicate a temperature corresponding to a damage limit.

23. (Currently Amended) ~~The method of claim 14 further comprising:~~ A method to determine a proper clock cycle time for multiple logic modules with different heat loads, the method comprising:

determining a thermal state of each logic module of the multiple logic modules, each thermal state defined by a discrete temperature range associated with a clock speed predetermined to be a proper clock cycle time for the temperature range;

determining whether a primary cooling means has been repaired;

operating the backup air cooling fans in a manner to insure that the fans always turn on even if the primary cooling means has failed; and

operating the backup air cooling fans in a manner to insure that the fans do not come on so soon as to cause an oscillation of a cooling state when the primary cooling means has failed.

24. –44. (Canceled)